

US EPA ARCHIVE DOCUMENT

USE OF SEDIMENT TOTAL ORGANIC CARBON AND GRAIN SIZE AS AN INDICATOR OF ORGANIC ENRICHMENT IN COASTAL SYSTEMS. Marguerite C. Pelletier

(Pelletier.Peg@epamail.epa.gov), D.E. Campbell, K.T. Ho and R.M. Burgess, US EPA ORD NHEERL-Atlantic Ecology Division, 27 Tarzwell Drive, Narragansett, RI 02882.

The Clean Water Act requires states to assess and categorize all waters to meet their designated uses (e.g., swimmable, fishable). If the designated use is not achieved, water bodies are listed as impaired and must be remediated using the Total Maximum Daily Load (TMDL) process. To accomplish this, the cause of impairment must be diagnosed. One recently developed diagnostic tool is the relationship of sediment total organic carbon (TOC) to grain size. These variables are commonly collected in environmental assessments in both fresh and salt water ecosystems. The amount of particle surface area available to adsorb a coating of organic carbon changes with grain size. Thus, a relationship between percent silt/clay and percent TOC for reference areas can be developed. Positive deviations from this relationship can be used as a diagnostic indicator of organic enrichment, a cause of impairment in coastal waters. Conversely, negative deviations indicate a sedimentation deficit (generally due to dredging) or excess mineral deposition (dredge spoils). This study examines the relationship between TOC/grain size to commonly utilized assessment endpoints (water quality, sediment contaminants, etc) using estuarine data collected by US EPA along the Atlantic coast.